IN THE CLAIMS

Please amend the claims as follows:

Claim 1 (Currently Amended): A quantum circuit ~~characterized in that~~ comprising:

a first section configured to represent a quantum bit ~~is represented~~ by [[the]] at least one polarization ~~directions~~ direction of light; [[,]]

a second section configured to sequentially supply a sequence of polarized light pulses representing a quantum bit string ~~is sequentially supplied~~ to the quantum circuit; [[,]] and

a third section configured to determine [[the]] an amount of polarization rotation and a phase difference applied to a certain light pulse ~~and the amount of phase difference are determined~~ on the basis of a ~~result of the measurement of~~ polarization measurement of [[the]] a preceding input light pulse sequence, thus realizing a controlled-unitary transform configured to cause a phase difference between a polarization indicating a $|0\rangle$ state and a polarization indicating a $|1\rangle$ state.

Claim 2 (Canceled).

Claim 3 (Currently Amended): The quantum circuit according to claim [[2]] 1, ~~characterized in that~~ further comprising:

a fourth section configured to couple a plurality of outputs of a polarization beam splitter ~~are coupled~~ via a polarization maintaining fiber; [[,]] and

a phase modulator [[is]] arranged in a position deviated from [[the]] a middle point of the polarization maintaining fiber, thus causing the phase difference between the polarization indicating the $|0\rangle$ state and [[that]] the polarization indicating the $|1\rangle$ state.

Claim 4 (Currently Amended): The quantum circuit according to claim 1, ~~2, or 3~~, ~~characterized in that~~ wherein in the sequence of polarized light pulses representing the quantum ~~bits, the~~ bit string, a number of photons included in [[one]] a single pulse is larger than 1.

Claim 5 (Currently Amended): A quantum computer including [[the]] a quantum circuit, ~~according to Claim 1, 2, 3, or 4~~ the quantum circuit comprising:

a first section configured to represent a quantum bit by at least one polarization direction of light;

a second section configured to sequentially supply a bit string to the quantum circuit; and

a third section configured to determine a polarization rotation and a phase difference applied to a certain light pulse on the basis of a polarization measurement of a preceding input light pulse sequence, thus realizing a controlled-unitary transform configured to cause a phase difference between a polarization indicating a $|0>$ state and a polarization indicating a $|1>$ state.

Claim 6 (New): The quantum circuit according to claim 3, wherein in the sequence of polarized light pulses representing the quantum bit string, a number of photons included in a single pulse is larger than 1.

Claim 7 (New): A quantum computer according to Claim 5, wherein the quantum circuit further comprises:

a fourth section configured to couple a plurality of outputs of a polarization beam splitter via a polarization maintaining fiber; and

a phase modulator arranged in a position deviated from a middle point of the polarization maintaining fiber, thus causing the phase difference between the polarization indicating the | 0 > state and the polarization indicating the | 1 > state.

Claim 8 (New): A quantum computer according to Claim 5, including a quantum circuit wherein in the sequence of polarized light pulses representing the quantum bit string, a number of photons included in a single pulse is larger than 1.

Claim 9 (New): A quantum computer according to Claim 7, including a quantum circuit wherein in the sequence of polarized light pulses representing the quantum bit string, a number of photons included in a single pulse is larger than 1.